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(54) Title: OLIGOMERS FOR MODULATING HUMAN IMMUNODEFICIENCY VIRUS

(57) Abstract

A novel class of compounds, known as peptide nucleic acids, bind complementary ssDNA and RNA strands more strongly than a corresponding DNA. The peptide nucleic acids generally comprise ligands such as naturally occurring DNA bases attached to a peptide backbone through a suitable linker.

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OLIGOMERS FOR MODULATING HUMAN IMMUNODEFICIENCY VIRUS

FIELD OF THE INVENTION

This invention is directed to compounds that are not polynucleotides yet which bind in a complementary fashion to DNA and RNA strands. In particular, the invention concerns compounds wherein naturally-occurring nucleobases or other nucleobase-binding moieties are covalently bound to a polyamide backbone. These compounds are useful for therapeutic and other applications directed to human immunodeficiency virus.

BACKGROUND OF THE INVENTION

Peptide Nucleic Acids (PNAs)

Oligodeoxyribonucleotides (DNAs) as long as 100 base pairs (bp) are routinely synthesized by solid phase methods using commercially available, fully automatic synthesis machines. The chemical synthesis of oligoribonucleotides (RNAs), however, is far less routine. Oligoribonucleotides are also much less stable than oligodeoxyribonucleotides, a fact which has contributed to the more prevalent use of oligodeoxyribonucleotides in medical and biological research directed to, for example, gene therapy or the regulation of transcription or translation.

Genes function by transferring information to a messenger RNA (mRNA) molecule, a process referred to as transcription. The interaction of mRNA with the ribosomal complex directs the synthesis of a protein encoded within its

sequence. This synthetic process is known as translation and requires the presence of various co-factors and building blocks, the amino acids, and their transfer RNAs (tRNA), all of which are present in normal cells.

The initiation of transcription requires specific recognition of a promoter DNA sequence by the RNA-synthesizing enzyme, RNA polymerase. In many cases in prokaryotic cells, and most likely in all cases in eukaryotic cells, this recognition is preceded by sequence-specific binding of protein transcription factors to the promoter. Other proteins which bind to the promoter, but whose binding prohibits action of RNA polymerase, are known as repressors. Thus, gene activation is typically regulated positively by transcription factors and negatively by repressors.

Most conventional drugs function by interaction with and modulation of one or more targeted endogenous proteins, *e.g.*, enzymes. However, such drugs are typically not specific for targeted proteins but interact with other proteins as well. Thus, a relatively large dose of drug must be used to effectively modulate a targeted protein. Typical daily doses of drugs are from 10^{-5}-10^{-1} millimoles per kilogram of body weight or 10^{-3}-10 millimoles for a 100 kilogram person. If this modulation could instead be effected by interaction with and inactivation of mRNA, a dramatic reduction in the necessary amount of drug could likely be achieved, along with a corresponding reduction in adverse side effects. Further reductions could be achieved if such interaction could be rendered site-specific. Given that a functioning gene continually produces mRNA throughout the life of the cell, it would thus be even more advantageous if gene transcription could be arrested in its entirety.

Oligodeoxynucleotides offer such opportunities. For example, synthetic oligodeoxynucleotides could be used as antisense probes to block and eventually lead to the breakdown of mRNA. Thus, synthetic DNA could suppress translation *in vivo*. It also may be possible to modulate the genome of an animal by, for example, triple helix formation

using oligonucleotides or other DNA recognizing agents. However, there are a number of drawbacks associated with triple helix formation. For example, it can only be used for homopurine sequences and it requires unphysiologically high ionic strength and low pH.

Furthermore, unmodified oligonucleotides are impractical both in the antisense approach and in the triple helix approach because they have short *in vivo* half-lives, and are difficult to prepare in more than milligram quantities and, thus, are prohibitively costly. They are also poor penetrators of the cell membrane.

These problems have resulted in an extensive search for improvements and alternatives. For example, the problems arising in connection with double-stranded DNA (dsDNA) recognition through triple helix formation have been diminished by a clever "switch back" chemical linking whereby a sequence of polypurine on one strand is recognized, and by "switching back", a homopurine sequence on the other strand can be recognized. Also, competent helix formation has been obtained by using artificial bases, thereby improving binding conditions with regard to ionic strength and pH.

In order to improve half life as well as membrane penetration, a large number of variations in polynucleotide backbones has been undertaken, although so far not with the desired results. These variations include the use of methylphosphonates, monothiophosphates, dithiophosphates, phosphoramidates, phosphate esters, bridged phosphoroamidates, bridged phosphorothioates, bridged methylenephosphonates, dephospho internucleotide analogs with siloxane bridges, carbonate bridges, carboxymethyl ester bridges, acetamide bridges, carbamate bridges, thioether, sulfoxy, sulfono bridges, various "plastic" DNAs, α-anomeric bridges, and borane derivatives.

The great majority of these modifications has led to decreased stability for hybrids formed between the modified oligonucleotide and its complementary, native oligonucleotide, as assayed by measuring T_m values.

Consequently, it is generally understood in the art that backbone modifications destabilize such hybrids, *i.e.*, result in lower T_m values, and should be kept to a minimum.

In WO 92/20702, moieties denominated peptide nucleic acids (PNAs) are disclosed wherein ligands are linked to a polyamide backbone through aza nitrogen atoms. In U.S. Serial No. filed April 26, 1993, peptide nucleic acids are disclosed in which their recognition moieties are linked to the polyamide backbone additionally through amido and/or ureido tethers. PCT/EP 92/01219 filed May 22, 1992 also discloses protein nucleic acids.

These peptide nucleic acids are synthesized by adaptation of certain peptide synthesis procedures, either in solution or on a solid phase. The synthons used are certain monomer amino acids or their activated derivatives, protected by standard groups. These oligonucleotide analogs also can be synthesized by using the corresponding diacids and diamines.

Peptide nucleic acid oligomers have been found to be superior to prior reagents in that they have significantly higher affinity for complementary single stranded DNA (ssDNA). These compounds are also able to form triple helices wherein a first PNA strand binds with RNA or ssDNA and a second PNA strand binds with the resulting double helix or with the first PNA strand. PNAs generally possess no significant charge and are water soluble, which facilitates cellular uptake. Moreover, PNAs contain amides of non-biological amino acids, making them biostable and resistant to enzymatic degradation, for example, by proteases.

Accordingly, PNAs can ideally be used to target RNA and ssDNA to produce antisense-type gene regulating moieties. Reagents that bind sequence-specifically to dsDNA, RNA, or ssDNA have applications as gene targeted drugs useful for modulating viral processes.

Human Immunodeficiency Virus (HIV)

HIV is the causative virus of AIDS. A number of RNA secondary structures have recently been identified for which may serve as therapeutic targets. Some of these include the HIV TAR structures (Feng, S. and E.C. Holland, *Nature*, **1988**, *334*, 165), including the stem loops at nucleotide 1-59, and 60-104 according to the nucleotide sequence as described by Ratner *et al.*, *Nature*, **1985**, *313*, 277; the boundary between the EGP/OMP regions of HIV (Le, S. *et al.*, *Nucl. Acids Res.*, **1988**, *16*, 5153; the boundary between the TMP/env genes of HIV (Le, S. *et al.*, *Nucl. Acids Res.*, **1988**, *16*, 5153; the HIV CAR structure (Dayton, E.T. *et al.*, *Science*, **1989**, *246*, 1625; the stem loop structure at the junction between the HIV gag and pol genes (nucleotides 1629-1674); the HIV CRS element; and the human iron responsive element (IRE) (Casey, J.L. *et al.*, *Science*, **1988**, *240*, 924.

Prior attempts to inhibit HIV by various antisense approaches have been made by a number of researchers. Zamecnic and coworkers have used phosphodiester oligonucleotides targeted to the reverse transcriptase primer site and to splice donor/acceptor sites. Zamecnik, P.C. *et al.*, *Proc. Natl. Acad. Sci. USA*, **1986**, *83*, 4143. Goodchild and coworkers have made phosphodiester compounds targeted to the initiation sites for translation, the cap site, the polyadenylation signal, the 5′ repeat region and a site between the gag and pol genes. Goodchild, J. *et al.*, *Proc. Natl. Acad. Sci. USA*, **1988**, *85*, 5507. In the Goodchild study, the greatest activity was achieved by targeting the polyadenylation signal. Agrawal and coworkers have extended the studies of Goodchild by using chemically modified oligonucleotide analogs which were also targeted to the cap and splice donor/acceptor sites. Agarwal, S. *et al.*, *Proc. Nat'l. Acad. Sci. USA*, **1988**, *85*, 7079. A portion of one of these overlapped a portion of the HIV TAR region but was not found to have exemplary effect. Neither was this oligonucleotide analog designed to interfere with the HIV TAR region. Agrawal and coworkers have used oligo-nucleotide

analogs targeted to the splice donor/acceptor site inhibit HIV infection in early infected and chronically infected cells. Agrawal, S. *et al.*, *Proc. Natl. Acad. Sci. USA*, **1989**, *86*, 7790.

Sarin and coworkers have also used chemically modified oligonucleotide analogs targeted to the cap and splice donor/acceptor sites. Sarin, P.S. *et al.*, *Proc. Natl. Acad. Sci. USA*, **1988**, *85*, 7448. Zia and coworkers have also used an oligonucleotide analog targeted to a splice acceptor site to inhibit HIV. Zaia, J.A. *et al.*, *J. Virol.*, **1988**, *62*, 3914. Matsukura and coworkers have synthesized oligonucleotide analogs targeted to the initiation of translation of the rev gene mRNA. Matsukura, M. *et al.*, *Proc. Natl. Acad. Sci. USA*, **1987**, *84*, 7706; Letsinger, R.L. *et al.*, *Proc. Natl. Acad. Sci. USA*, **1989**, *86*, 6553. Mori and coworkers have used a different oligonucleotide analog targeted to the same region as Matsukura. Mori, K. *et al.*, *Nucleic Acids Res.*, **1989**, *17*, 8207. Shibahara and coworkers have used oligonucleotide analogs targeted to a splice acceptor site as well as the reverse transcriptase primer binding site. Shibahara, S. *et al.*, *Nucl. Acids Res.* **1989**, *17*, 239. Letsinger and coworkers have synthesized and tested a oligonucleotide analogs with conjugated cholesterol targeted to a splice site. Mori, K. *et al.*, *Nucleic Acids Res.*, **1989**, *17*, 8207. Stevenson and Iversen have conjugated polylysine to oligonucleotide analogs targeted to the splice donor and the 5'-end of the first exon of the tat gene. Stevenson, M. and P.L. Iversen, *J. Gen. Virol.*, **1989**, *70*, 2673. Buck and coworkers have recently described the use of phosphate-methylated DNA oligonucleotides targeted to HIV mRNA and DNA. Buck, H.M. *et al.*, *Science*, **1990**, *248*, 208-212.

These prior attempts at targeting HIV have largely focused on the nature of the chemical modification used in the oligonucleotide analog. Although each of the above publications have reported some degree of success in inhibiting some function of the virus, a general therapeutic

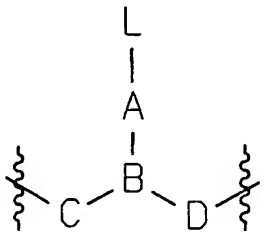
scheme to target HIV and other retroviruses has not been found. Accordingly, there has been and continues to be a long-felt need for the design of oligomers which are capable of effective therapeutic use.

SUMMARY OF THE INVENTION

The present invention provides oligomers comprising peptide nucleic acids (PNAs), that bind complementary ssDNA and RNA strands through their oligoribonucleotide ligands which are linked to a peptide backbone. The sequence of the oligoribonucleotide ligands specifies the target to which they bind. These PNAs are extremely useful drugs for treating diseases like AIDS and other viral infections. These compositions are also useful in diagnostic applications and as research tools.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Oligomers of the present invention are comprised wherein at least one subunit of the oligomer is a peptide nucleic acid of the formula:



(I)

wherein:

L is one of the adenine, thymine, cytosine or guanine heterocyclic bases of the oligomer;

C is $(CR^6R^7)_y$ where R^6 is hydrogen and R^7 is selected from the group consisting of the side chains of naturally occurring alpha amino acids, or R^6 and R^7 are independently selected from the group consisting of hydrogen, (C_2-C_6)alkyl, aryl, aralkyl, heteroaryl, hydroxy, (C_1-C_6)alkoxy, (C_1-C_6)alkylthio, NR^3R^4 and SR^5, where each of R^3 and R^4 is independently selected from the group consisting of hydrogen,

(C_1-C_4)alkyl, hydroxy- or alkoxy- or alkylthio-substituted (C_1-C_4)alkyl, hydroxy, alkoxy, alkylthio and amino; and R^5 is hydrogen, (C_1-C_6)alkyl, hydroxy-, alkoxy-, or alkylthio-substituted (C_1-C_6)alkyl, or R^6 and R^7 taken together complete an alicyclic or heterocyclic system;

D is $(CR^6R^7)_z$ where R^6 and R^7 are as defined above;

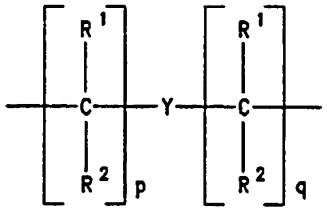
each of y and z is zero or an integer from 1 to 10, the sum y + z being greater than 2 but not more than 10;

G is $-NR^3CO-$, $-NR^3CS-$, $-NR^3SO-$ or $-NR^3SO_2-$, in either orientation, where R^3 is as defined above;

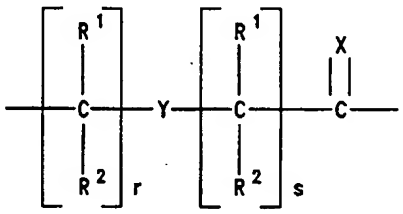
each pair of A and B is selected such that:

(a) A is a group of formula (IIa), (IIb) or (IIc) and B is N or R^3N^+; or

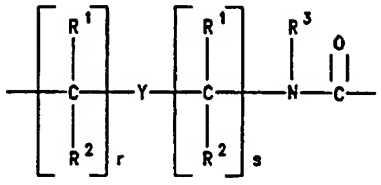
(b) A is a group of formula (IId) and B is CH;



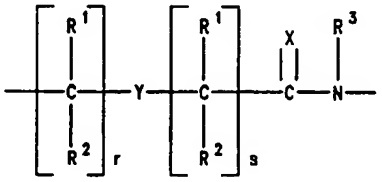
(IIa)



(IIb)



(IIc)



(IId)

where:

X is O, S, Se, NR^3, CH_2 or $C(CH_3)_2$;

Y is a single bond, O, S or NR^4;

each of p and q is zero or an integer from 1 to 5, the sum p+q being not more than 10;

each of r and s is zero or an integer from 1 to 5, the sum r+s being not more than 10;

each R^1 and R^2 is independently selected from the group consisting of hydrogen, (C_1-C_4)alkyl which may be hydroxy- or alkoxy- or alkylthio-

substituted, hydroxy, alkoxy, alkylthio, amino and halogen.

Subunits, as used herein, refers to basic unit which are chemically similar and which can form polymers. Repeating basic units form polymers referred to as "oligomers". Oligomers of the present invention may thus refer to oligomers in which substantially all subunits of the oligomer are subunits as described in Formula I. Oligomers of the present invention may also comprise one or more subunits which are naturally occuring nucleotides or nucleotide analogs as long as at least one subunit satisfies Formula I. Thus, oligomers as used herein may refer to a range of oligomers from oligomers comprising only one PNA subunit as defined in Formula I to oligomers in which every subunit is a PNA subunit as defined in Formula I.

Those subunits which are not PNA subunits comprise naturally occuring bases, sugars, and intersugar (backbone) linkages as well as non-naturally occurring portions which function similarly to naturally occurring portions.

Sequences of oligomers of the present invention are defined by reference to the L group (for PNA subunits) or nucleobase (for nucleotide subunits) at a given position. Thus, for a given oligomer, the nomeclature is modeled after traditional nucleotide nomenclature, identifying each PNA subunit by the identity of its L group such as the heterocycles adenine (A), thymine (T), guanine (G) and cytosine (C) and identifying nucleotides or nucleosides by these same heterocycle residing on the sugar backbone. The sequences are conveniently provided in traditional 5′ to 3′ or amino to carboxy orientation.

Oligomers of the present invention may range in size from about 5 to about 50 subunits in length. In other embodiments of the present invention, oligomers may range in size from about 10 to about 30 subunits in length. In still other embodiments of the present invention oligomers may range in size from about 10 to about 25 subunits in length. In yet further embodiments of the present invention,

oligomers may range in size from about 12 to about 20 subunits in length.

The preparation of protein nucleic acid oligomers is known in the art, such as is described in PCT/EP 92/01219 filed May 22, 1992, which is incorporated by reference herein in its entirety.

Briefly, the principle of anchoring molecules onto a solid matrix, which helps in accounting for intermediate products during chemical transformations, is known as Solid-Phase Synthesis or Merrifield Synthesis (*see, e.g.*, Merrifield, *J. Am. Chem. Soc.*, **1963**, *85*, 2149 and *Science*, **1986**, *232*, 341). Established methods for the stepwise or fragmentwise solid-phase assembly of amino acids into peptides normally employ a beaded matrix of slightly cross-linked styrene-divinylbenzene copolymer, the cross-linked copolymer having been formed by the pearl polymerization of styrene monomer to which has been added a mixture of divinylbenzenes. A level of 1-2% cross-linking is usually employed. Such a matrix also can be used in solid-phase PNA synthesis in accordance with the present invention.

Concerning the initial functionalization of the solid phase, more than fifty methods have been described in connection with traditional solid-phase peptide synthesis (*see, e.g.*, Barany and Merrifield in "The Peptides" Vol. 2, Academic Press, New York, 1979, pp. 1-284, and Stewart and Young, "Solid Phase Peptide Synthesis", 2nd Ed., Pierce Chemical Company, Illinois, 1984). Reactions for the introduction of chloromethyl functionality (Merrifield resin; via a chloromethyl methyl ether/$SnCl_4$ reaction), aminomethyl functionality (via an N-hydroxymethylphthalimide reaction; *see*, Mitchell, *et al.*, *Tetrahedron Lett.*, **1976**, *3795*), and benzhydrylamino functionality (Pietta, *et al.*, *J. Chem. Soc.*, **1970**, 650) are the most widely applied. Regardless of its nature, the purpose of the functionality is normally to form an anchoring linkage between the copolymer solid support and the C-terminus of the first amino acid to be coupled to the solid support. As will be recognized, anchoring linkages

also can be formed between the solid support and the amino acid N-terminus. It is generally convenient to express the "concentration" of a functional group in terms of millimoles per gram (mmol/g). Other reactive functionalities which have been initially introduced include 4-methylbenzhydrylamino and 4-methoxybenzhydrylamino. All of these established methods are in principle useful within the context of the present invention. Preferred methods for PNA synthesis employ aminomethyl as the initial functionality, in that aminomethyl is particularly advantageous with respect to the incorporation of "spacer" or "handle" groups, owing to the reactivity of the amino group of the aminomethyl functionality with respect to the essentially quantitative formation of amide bonds to a carboxylic acid group at one end of the spacer-forming reagent. A vast number of relevant spacer- or handle-forming bifunctional reagents have been described (*see*, Barany, *et al.*, *Int. J. Peptide Protein Res.*, **1987**, *30*, 705), especially reagents which are reactive towards amino groups such as found in the aminomethyl function. Representative bifunctional reagents include 4-(haloalkyl)aryl-lower alkanoic acids such as 4-(bromomethyl)phenylacetic acid, Boc-aminoacyl-4-(oxymethyl)aryl-lower alkanoic acids such as Boc-aminoacyl-4-(oxymethyl)phenylacetic acid, N-Boc-p-acylbenzhydrylamines such as N-Boc-p-glutaroylbenzhydrylamine, N-Boc-4'-lower alkyl-p-acylbenzhydrylamines such as N-Boc-4'-methyl-p-glutaroylbenzhydrylamine, N-Boc-4'-lower alkoxy-p-acylbenzhydrylamines such as N-Boc-4'-methoxy-p-glutaroyl-benzhydrylamine, and 4-hydroxymethylphenoxyacetic acid. One type of spacer group particularly relevant within the context of the present invention is the phenylacetamidomethyl (Pam) handle (Mitchell and Merrifield, *J. Org. Chem.*, **1976**, *41*, 2015) which, deriving from the electron withdrawing effect of the 4-phenylacetamidomethyl group, is about 100 times more stable than the classical benzyl ester linkage towards the Boc-amino deprotection reagent trifluoroacetic acid (TFA).

Certain functionalities (*e.g.*, benzhydrylamino, 4-methylbenzhydrylamino and 4-methoxybenzhydrylamino) which may be incorporated for the purpose of cleavage of a synthesized PNA chain from the solid support such that the C-terminal of the PNA chain is in amide form, require no introduction of a spacer group. Any such functionality may advantageously be employed in the context of the present invention.

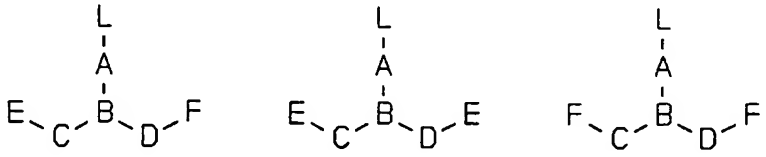
An alternative strategy concerning the introduction of spacer or handle groups is the so-called "preformed handle" strategy (*see*, Tam, *et al.*, *Synthesis*, **1979**, 955-957), which offers complete control over coupling of the first amino acid, and excludes the possibility of complications arising from the presence of undesired functional groups not related to the peptide or PNA synthesis. In this strategy, spacer or handle groups, of the same type as described above, are reacted with the first amino acid desired to be bound to the solid support, the amino acid being N-protected and optionally protected at the other side-chains which are not relevant with respect to the growth of the desired PNA chain. Thus, in those cases in which a spacer or handle group is desirable, the first amino acid to be coupled to the solid support can either be coupled to the free reactive end of a spacer group which has been bound to the initially introduced functionality (for example, an aminomethyl group) or can be reacted with the spacer-forming reagent. The space-forming reagent is then reacted with the initially introduced functionality. Other useful anchoring schemes include the "multidetachable" resins (Tam, *et al.*, *Tetrahedron Lett.*, **1979**, 4935 and *J. Am. Chem. Soc.*, **1980**, *102*, 611; Tam, *J. Org. Chem.*, **1985**, *50*, 5291), which provide more than one mode of release and thereby allow more flexibility in synthetic design.

Suitable choices for N-protection are the tert-butyloxycarbonyl (Boc) group (Carpino, *J. Am. Chem. Soc.*, **1957**, *79*, 4427; McKay, *et al.*, *J. Am. Chem. Soc.*, **1957**, *79*, 4686; Anderson, *et al.*, *J. Am. Chem. Soc.*, **1957**, *79*, 6180) normally in combination with benzyl-based groups for the

protection of side chains, and the 9-fluorenylmethyloxy-carbonyl (Fmoc) group (Carpino, *et al.*, *J. Am. Chem. Soc.*, **1970**, *92*, 5748 and *J. Org. Chem.*, **1972**, *37*, 3404), normally in combination with tert-butyl (tBu) for the protection of any side chains, although a number of other possibilities exist which are well known in conventional solid-phase peptide synthesis. Thus, a wide range of other useful amino protecting groups exist, some of which are Adoc (Hass, *et al.*, *J. Am. Chem. Soc.*, **1966**, *88*, 1988), Bpoc (Sieber, *Helv. Chem. Acta.*, **1968**, *51*, 614), Mcb (Brady, *et al.*, *J. Org. Chem.*, **1977**, *42*, 143), Bic (Kemp, *et al.*, *Tetrahedron*, **1975**, 4624), the o-nitrophenylsulfenyl (Nps) (Zervas, *et al.*, *J. Am. Chem. Soc.*, **1963**, *85*, 3660), and the dithiasuccinoyl (Dts) (Barany, *et al.*, *J. Am. Chem. Soc.*, **1977**, *99*, 7363). These amino protecting groups, particularly those based on the widely-used urethane functionality, successfully prohibit racemization (mediated by tautomerization of the readily formed oxazolinone (azlactone) intermediates (Goodman, *et al.*, *J. Am. Chem. Soc.*, **1964**, *86*, 2918)) during the coupling of most α-amino acids. In addition to such amino protecting groups,a whole range of otherwise "worthless" nonurethane-type of amino protecting groups are applicable when assembling PNA molecules, especially those built from achiral units. Thus, not only the above-mentioned amino protecting groups (or those derived from any of these groups) are useful within the context of the present invention, but virtually any amino protecting group which largely fulfills the following requirements: (1) stability to mild acids (not significantly attacked by carboxyl groups); (2) stability to mild bases or nucleophiles (not significantly attacked by the amino group in question); (3) resistance to acylation (not significantly attacked by activated amino acids). Additionally: (4) the protecting group must be close to quantitatively removable, without serious side reactions, and (5) the optical integrity, if any, of the incoming amino acid should preferably be highly preserved upon coupling. Finally, the choice of side-chain protecting groups, in

general, depends on the choice of the amino protecting group, since the protection of side-chain functionalities must withstand the conditions of the repeated amino deprotection cycles. This is true whether the overall strategy for chemically assembling PNA molecules relies on, for example, differential acid stability of amino and side-chain protecting groups (such as is the case for the above-mentioned "Boc-benzyl" approach) or employs an orthogonal, that is, chemoselective, protection scheme (such as is the case for the above-mentioned "Fmoc-tBu" approach),

Following coupling of the first amino acid, the next stage of solid-phase synthesis is the systematic elaboration of the desired PNA chain to incorporate additional subunits using monomer synthons. Novel monomer synthons may be selected from the group consisting of amino acids, diacids and diamines having general formulae:



(II) (III) (IV)

wherein L, A, B, C and D are as defined above, except that any amino groups therein may be protected by amino protecting groups; E is COOH, CSOH, SOOH, SO_2OH or an activated derivative thereof; and F is NHR^3 or $NPgR^3$, where R^3 is as defined above and Pg is an amino protecting group. This elaboration involves repeated deprotection/coupling cycles. The temporary protecting group, such as a Boc or Fmoc group, on the last-coupled amino acid is quantitatively removed by a suitable treatment, for example, by acidolysis, such as with trifluoroacetic acid, in the case of Boc, or by base treatment, such as with piperidine, in the case of Fmoc, so as to liberate the N-terminal amine function.

The next desired N-protected amino acid is then coupled to the N-terminal of the last-coupled amino acid. This coupling of the C-terminal of an amino acid with the N-

terminal of the last-coupled amino acid can be achieved in several ways. For example, it can be bound by providing the incoming amino acid in a form with the carboxyl group activated by any of several methods, including the initial formation of an active ester derivative such as a 2,4,5-trichlorophenyl ester (Pless, *et al.*, *Helv. Chim. Acta*, **1963**, *46*, 1609), a phthalimido ester (Nefkens, *et al.*, *J. Am. Chem. Soc.*, **1961**, *83*, 1263), a pentachlorophenyl ester (Kupryszewski, *Rocz. Chem.*, **1961**, *35*, 595), a pentafluorophenyl ester (Kovacs, *et al.*, *J. Am. Chem. Soc.*, **1963**, *85*, 183), an o-nitrophenyl ester (Bodanzsky, *Nature*, **1955**, *175*, 685), an imidazole ester (Li, *et al.*, *J. Am. Chem. Soc.*, **1970**, *92*, 7608), and a 3-hydroxy-4-oxo-3,4-dihydroquinazoline (Dhbt-OH) ester (Konig, *et al.*, *Chem. Ber.*, **1973**, *103*, 2024 and 2034), or the initial formation of an anhydride such as a symmetrical anhydride (Wieland, *et al.*, *Angew. Chem., Int. Ed. Engl.*, **1971**, *10*, 336). Alternatively, the carboxyl group of the incoming amino acid can be reacted directly with the N-terminal of the last-coupled amino acid with the assistance of a condensation reagent such as, for example, dicyclohexylcarbodiimide (Sheehan, *et al.*, *J. Am. Chem. Soc.*, **1955**, 77, 1067) or derivatives thereof. Benzotriazolyl N-oxytrisdimethylaminophosphonium hexafluorophosphate (BOP), "Castro's reagent" (*see, e.g.*, Rivaille, *et al.*, *Tetrahedron*, **1980**, *36*, 3413) is recommended when assembling PNA molecules containing secondary amino groups. Finally, activated PNA monomers analogous to the recently-reported amino acid fluorides (Carpino, *J. Am. Chem. Soc.*, **1990**, *112*, 9651) hold considerable promise to be used in PNA synthesis as well.

Following assembly of the desired PNA chain, including protecting groups, the next step will normally be deprotection of the amino acid moieties of the PNA chain and cleavage of the synthesized PNA from the solid support. These processes can take place substantially simultaneously, thereby providing the free PNA molecule in the desired form. Alternatively, in cases in which condensation of two separately synthesized PNA chains is to be carried out, it is

possible by choosing a suitable spacer group at the start of the synthesis to cleave the desired PNA chains from their respective solid supports (both peptide chains still incorporating their side-chain protecting groups) and finally removing the side-chain protecting groups after, for example, coupling the two side-chain protected peptide chains to form a longer PNA chain.

In the above-mentioned "Boc-benzyl" protection scheme, the final deprotection of side-chains and release of the PNA molecule from the solid support is most often carried out by the use of strong acids such as anhydrous HF (Sakakibara, *et al.*, *Bull. Chem. Soc. Jpn.*, **1965**, *38*, 4921), boron tris (trifluoroacetate) (Pless, *et al.*, *Helv. Chim. Acta*, **1973**, *46*, 1609), and sulfonic acids such as trifluoromethanesulfonic acid and methanesulfonic acid (Yajima, *et al.*, *J. Chem. Soc., Chem. Comm.*, **1974**, 107). This conventional strong acid (*e.g.*, anhydrous HF) deprotection method, produces very reactive carbocations that may lead to alkylation and acylation of sensitive residues in the PNA chain. Such side-reactions are only partly avoided by the presence of scavengers such as anisole, phenol, dimethyl sulfide, and mercaptoethanol and, therefore, the sulfide-assisted acidolytic S_N2 deprotection method (Tam, *et al.*, *J. Am. Chem. Soc.*, **1983**, *105*, 6442 and *J. Am. Chem. Soc.*, **1986**, *108*, 5242), the so-called "low", which removes the precursors of harmful carbocations to form inert sulfonium salts, is frequently employed in peptide and PNA synthesis, either solely or in combination with "high" methods. Less frequently, in special cases, other methods used for deprotection and/or final cleavage of the PNA-solid support bond are, for example, such methods as base-catalyzed alcoholysis (Barton, *et al.*, *J. Am. Chem. Soc.*, **1973**, *95*, 4501), and ammonolysis as well as hydrazinolysis (Bodanszky, *et al.*, *Chem. Ind.*, **1964** 1423), hydrogenolysis (Jones, *Tetrahedron Lett.* **1977** 2853 and Schlatter, *et al.*, *Tetrahedron Lett.* **1977** 2861)), and photolysis (Rich and Gurwara, *J. Am. Chem. Soc.*, **1975** *97*, 1575)).

Finally, in contrast with the chemical synthesis of "normal" peptides, stepwise chain building of achiral PNAs such as those based on aminoethylglycyl backbone units can start either from the N-terminus or the C-terminus, because the coupling reactions are free of racemization. Those skilled in the art will recognize that whereas syntheses commencing at the C-terminus typically employ protected amine groups and free or activated acid groups, syntheses commencing at the N-terminus typically employ protected acid groups and free or activated amine groups.

Based on the recognition that most operations are identical in the synthetic cycles of solid-phase peptide synthesis (as is also the case for solid-phase PNA synthesis), a new matrix, PEPS, was recently introduced (Berg, *et al.*, *J. Am. Chem. Soc.*, **1989**, *111*, 8024 and International Patent Application WO 90/02749) to facilitate the preparation of large numbers of peptides. This matrix is comprised of a polyethylene (PE) film with pendant long-chain polystyrene (PS) grafts (molecular weight on the order of 10^6). The loading capacity of the film is as high as that of a beaded matrix, but PEPS has the additional flexibility to suit multiple syntheses simultaneously. Thus, in a new configuration for solid-phase peptide synthesis, the PEPS film is fashioned in the form of discrete, labeled sheets, each serving as an individual compartment. During all the identical steps of the synthetic cycles, the sheets are kept together in a single reaction vessel to permit concurrent preparation of a multitude of peptides at a rate close to that of a single peptide by conventional methods. It was reasoned that the PEPS film support, comprising linker or spacer groups adapted to the particular chemistry in question, should be particularly valuable in the synthesis of multiple PNA molecules, these being conceptually simple to synthesize since only four different reaction compartments are normally required, one for each of the four "pseudo-nucleotide" units. Thus, the PEPS film support has been successfully tested in a number of PNA syntheses carried out

in a parallel and substantially simultaneous fashion. The yield and quality of the products obtained from PEPS were comparable to those obtained by using the traditional polystyrene beaded support. Also, experiments with other geometries of the PEPS polymer such as, for example, non-woven felt, knitted net, sticks or microwellplates have not indicated any limitations of the synthetic efficacy.

Two other methods proposed for the simultaneous synthesis of large numbers of peptides also apply to the preparation of multiple, different PNA molecules. The first of these methods (Geysen, *et al.*, *Proc. Natl. Acad. Sci. USA*, 1984, *81*, 3998) utilizes acrylic acid-grafted polyethylene-rods and 96-microtiter wells to immobilize the growing peptide chains and to perform the compartmentalized synthesis. While highly effective, the method is only applicable on a microgram scale. The second method (Houghten, *Proc. Natl. Acad. Sci. USA*, 1985, *82*, 5131) utilizes a "tea bag" containing traditionally-used polymer beads. Other relevant proposals for multiple peptide or PNA synthesis in the context of the present invention include the simultaneous use of two different supports with different densities (Tregear, in "*Chemistry and Biology of Peptides*", J. Meienhofer, ed., Ann Arbor Sci. Publ., Ann Arbor, 1972 pp. 175-178), combining of reaction vessels via a manifold (Gorman, *Anal. Biochem.*, 1984, *136*, 397), multicolumn solid-phase synthesis (e.g. Krchnak, *et al.*, *Int. J. Peptide Protein Res.*, 1989, *33*, 209), and Holm and Meldal, in "*Proceedings of the 20th European Peptide Symposium*", G. Jung and E. Bayer, eds., Walter de Gruyter & Co., Berlin, 1989 pp. 208-210), and the use of cellulose paper (Eichler, *et al.*, *Collect. Czech. Chem. Commun.*, 1989, *54*, 1746).

While the conventional cross-linked styrene/divinylbenzene copolymer matrix and the PEPS support are presently preferred in the context of solid-phase PNA synthesis, a non-limiting list of examples of solid supports which may be of relevance are: (1) Particles based upon copolymers of dimethylacrylamide cross-linked with N,N'-

bisacryloylethylenediamine, including a known amount of N-tertbutoxycarbonyl-beta-alanyl-N'-acryloylhexamethylenediamine. Several spacer molecules are typically added via the beta alanyl group, followed thereafter by the amino acid residue subunits. Also, the beta alanyl-containing monomer can be replaced with an acryloyl sarcosine monomer during polymerization to form resin beads. The polymerization is followed by reaction of the beads with ethylenediamine to form resin particles that contain primary amines as the covalently linked functionality. The polyacrylamide-based supports are relatively more hydrophilic than are the polystyrene-based supports and are usually used with polar aprotic solvents including dimethylformamide, dimethylacetamide, N-methylpyrrolidone and the like (see Atherton, *et al.*, *J. Am. Chem. Soc.*, **1975**, *97*, 6584, *Bioorg. Chem.* **1979**, *8*, 351), and J.C.S. Perkin I 538 (1981)); (2) a second group of solid supports is based on silica-containing particles such as porous glass beads and silica gel. One example is the reaction product of trichloro-[3-(4-chloromethyl)phenyl]propylsilane and porous glass beads (see Parr and Grohmann, *Angew. Chem. Internal. Ed.* **1972**, *11*, 314) sold under the trademark "PORASIL E" by Waters Associates, Framingham, MA, USA. Similarly, a mono ester of 1,4-dihydroxymethylbenzene and silica (sold under the trademark "BIOPAK" by Waters Associates) has been reported to be useful (see Bayer and Jung, *Tetrahedron Lett.*, **1970**, 4503); (3) a third general type of useful solid supports can be termed composites in that they contain two major ingredients: a resin and another material that is also substantially inert to the organic synthesis reaction conditions employed. One exemplary composite (see Scott, *et al.*, *J. Chrom. Sci.*, **1971**, *9*, 577) utilized glass particles coated with a hydrophobic, cross-linked styrene polymer containing reactive chloromethyl groups, and was supplied by Northgate Laboratories, Inc., of Hamden, CT, USA. Another exemplary composite contains a core of fluorinated ethylene polymer onto which has been grafted polystyrene (see Kent and

Merrifield, *Israel J. Chem.* **1978**, *17*, 243) and van Rietschoten in "*Peptides 1974*", Y. Wolman, Ed., Wiley and Sons, New York, **1975**, pp. 113-116); and (4) contiguous solid supports other than PEPS, such as cotton sheets (Lebl and Eichler, *Peptide Res.* **1989**, *2*, 232) and hydroxypropylacrylate-coated polypropylene membranes (Daniels, *et al.*, *Tetrahedron Lett.* **1989**, 4345), are suited for PNA synthesis as well.

Whether manually or automatically operated, solid-phase PNA synthesis in the context of the present invention is normally performed batchwise. However, most of the syntheses may equally well be carried out in the continuous-flow mode, where the support is packed into columns (Bayer, *et al.*, *Tetrahedron Lett.*, **1970**, 4503 and Scott, *et al.*, *J. Chromatogr. Sci.*, **1971**, *9*, 577). With respect to continuous-flow solid-phase synthesis, the rigid poly(dimethylacrylamide)-Kieselguhr support (Atherton, *et al.*, *J. Chem. Soc. Chem. Commun.*, **1981**, 1151) appears to be particularly successful, but another valuable configuration concerns the one worked out for the standard copoly(styrene-1%-divinylbenzene) support (Krchnak, *et al.*, *Tetrahedron Lett.*, **1987**, 4469).

While the solid-phase technique is presently preferred in the context of PNA synthesis, other methodologies or combinations thereof, for example, in combination with the solid-phase technique, apply as well: (1) the classical solution-phase methods for peptide synthesis (*e.g.*, Bodanszky, "*Principles of Peptide Synthesis*", Springer-Verlag, Berlin-New York **1984**), either by stepwise assembly or by segment/fragment condensation, are of particular relevance when considering especially large scale productions (gram, kilogram, and even tons) of PNA compounds; (2) the so-called "liquid-phase" strategy, which utilizes soluble polymeric supports such as linear polystyrene (Shemyakin, *et al.*, *Tetrahedron Lett.*, **1965**, 2323) and polyethylene glycol (PEG) (Mutter and Bayer, *Angew. Chem., Int. Ed. Engl.*, **1974**, *13*, 88), is useful; (3) random polymerization (*see, e.g.*, Odian, "*Principles of*

Polymerization", McGraw-Hill, New York (1970)) yielding mixtures of many molecular weights ("polydisperse") peptide or PNA molecules are particularly relevant for purposes such as screening for antiviral effects; (4) a technique based on the use of polymer-supported amino acid active esters (Fridkin, *et al.*, *J. Am. Chem. Soc.*, **1965**, *87*, 4646), sometimes referred to as "inverse Merrifield synthesis" or "polymeric reagent synthesis", offers the advantage of isolation and purification of intermediate products, and may thus provide a particularly suitable method for the synthesis of medium-sized, optionally protected, PNA molecules, that can subsequently be used for fragment condensation into larger PNA molecules; (5) it is envisaged that PNA molecules may be assembled enzymatically by enzymes such as proteases or derivatives thereof with novel specificities (obtained, for example, by artificial means such as protein engineering). Also, one can envision the development of "PNA ligases" for the condensation of a number of PNA fragments into very large PNA molecules; (6) since antibodies can be generated to virtually any molecule of interest, the recently developed catalytic antibodies (abzymes), discovered simultaneously by the groups of Lerner (Tramantano, *et al.*, *Science*, **1986**, *234*, 1566) and of Schultz (Pollack, *et al.*, *Science*, **1986**, *234*, 1570), should also be considered as potential candidates for assembling PNA molecules. Thus, there has been considerable success in producing abzymes catalyzing acyl-transfer reactions (see for example Shokat, *et al.*, *Nature*, **1989**, *338*, 269) and references therein). Finally, completely artificial enzymes, very recently pioneered by Stewart's group (Hahn, *et al.*, *Science*, **1990**, *248*, 1544), may be developed to suit PNA synthesis. The design of generally applicable enzymes, ligases, and catalytic antibodies, capable of mediating specific coupling reactions, should be more readily achieved for PNA synthesis than for "normal" peptide synthesis since PNA molecules will often be comprised of only four different amino acids (one for each of the four native nucleobases) as compared to the

twenty natural by occurring (proteinogenic) amino acids constituting peptides. In conclusion, no single strategy may be wholly suitable for the synthesis of a specific PNA molecule, and therefore, sometimes a combination of methods may work best.

Peptide nucleic acid oligomers hybridizable with, or targeted to, viral targets are provided by the present invention. By hybridizable is meant that at least 70% sequence homology is present. In preferred embodiments of the present invention, peptide nucleic acid oligomers have at least 85% sequence homology to a desired target. In still more preferred embodiments of the present invention, peptide nucleic acid oligomers of the present invention are at least 95% homologous to a target of interest.

Oligomers of the present invention comprising PNA subunits can be used in diagnostics, therapeutics and as research reagents and kits. Diagnostic and research reagents may be employed by contacting a cell or other biological sample such as blood, urine, cerebral fluid, ascites, etc. with oligomers of the present invention *in vitro*.

Oligomers of the invention can be formulated in a pharmaceutical composition, which can include carriers, thickeners, diluents, buffers, preservatives, surface active agents and the like in addition to the oligomer. Pharmaceutical compositions also can include one or more active ingredients such as antimicrobial agents, anti-inflammatory agents, anesthetics, and the like in addition to oligomer.

The pharmaceutical composition can be administered in a number of ways depending on whether local or systemic treatment is desired, and on the area to be treated. Administration can be topically (including opthalmically, vaginally, rectally, intranasally), orally, by inhalation, or parenterally, for example by intravenous drip, subcutaneous, intraperitoneal or intramuscular injection.

Formulations for topical administration can include ointments, lotions, creams, gels, drops, suppositories,

sprays, liquids and powders. Conventional pharmaceutical carriers, aqueous, powder or oily bases, thickeners and the like may be necessary or desirable. Coated condoms may also be useful.

Compositions for oral administration include powders or granules, suspensions or solutions in water or non-aqueous media, capsules, sachets, or tablets. Thickeners, flavorings, diluents, emulsifiers, dispersing aids or binders may be desirable.

Formulations for parenteral administration can include sterile aqueous solutions which also can contain buffers, diluents and other suitable additives.

Dosing is dependent on severity and responsiveness of the condition to be treated, but will normally be one or more doses per day, with course of treatment lasting from several days to several months or until a cure is effected or a diminution of disease state is achieved. Persons of ordinary skill can easily determine optimum dosages, dosing methodologies and repetition rates.

Such methodologies will be useful for targeting the following targets for treatment of viral manifestations.

Human Immunodeficiency Virus (HIV)

An elaborate set of control elements in the HIV genome determine whether the virus replicates or remains dormant. Of the nine genes identified in the HIV genome, only three are from the core and envelope. Haseltine, W.A. and F. Wong-Staal, *Scientific American*, **1988**, October, 52. The other six genes are involved in regulation of the production of viral proteins. Regulatory genes work by encoding a protein that interacts with a responsive element somewhere else on the viral genome. The major regulatory gene responsible for initiating the burst of replication is the <u>tat</u> (trans-activator) gene. The product of the <u>tat</u> gene, tat protein, works by interaction with a short sequence element known as TAR (trans-acting responsive element). The TAR sequence is encoded in the viral long terminal repeats

(LTR's), and therefore is included in the mRNA from every HIV gene.

Expression of the tat protein results in increased expression of other HIV genes up to 1,000 fold, including the tat gene itself. Because of this autoregulatory positive feedback, and the fact that the TAR sequence in included in the mRNA from every HIV transcript, a immense amount of viral gene expression is triggered when the tat gene is activated. The interaction between the tat gene and the TAR element is therefore crucial to the life cycle of the HIV, and specific disruption of this interaction is likely to interrupt the propagation of the virus.

The mechanism of trans-activation of TAR-containing genes by the tat protein has recently been studied intensely. Sharp, P.A. *et al.*, *Cell*, **1989**, *59*, 229. Although much remains to be learned, two important points have become clear; that tat increases the expression of TAR-containing genes by increasing both the amount of viral mRNA and the efficiency of its translation, and that TAR functions as an RNA structure, rather than a DNA structure.

In summary, there is strong and direct evidence from a number of studies that the HIV tat protein is responsible for triggering an enormous amount of viral gene expression, that this occurs by interaction with the TAR sequence which is incorporated into every HIV mRNA transcript, that the HIV TAR sequence functions as an RNA structure and that the correct TAR RNA structure is essential for tat transactivation.

A series of antiviral oligomers comprising PNA targeted to the translation initiation codon (AUG), 3' untranslated region (3' UTR), 5' splice junction (5' spljnct), 3' splice junction (3' spljnct), coding sequence, frameshift region or 5' untranslated region (5' UTR) of HIV gene selected from the group consisting of env, gag, pol, rev and tat are developed with specific oligomer sequences. The oligomer sequences, SEQ ID numbers and targets of these oligomers are shown in Table 1.

TABLE 1

SEQUENCE	TARGET	SEQ ID NO:
GGGGCGGGGCGGGGCGGGGCG		1
GCGGGGTA		2
GGGGGGTA		3
GCAAAATA		4
GCTTTTTA		5
GCCCCCTA		6
TCGGGGTT		7
TTGGGGTT		8
CCGGGGCC		9
CGGGGGTA		10
CGGGGTTGGGG		11
TTGGGGTTGGGGTTGGGGTTGGGGG		12
TTTGGTTT		13
GGGGTTGGGG		14
TTGGGGTTGGGGTTGGGGTTGGGG		15
TTGGGGTTGGGGTTGGGGTT		16
TTGGGGTTGGGGTTGGGG		17
TTGGGGTTGGGGTT		18
TTGGGGTTGGGG		19
GGGGTTGGGGTTGGGG		20
GGGGTTGGGGTTGGGGTTGGGG		21
TTGGGG		22
GGCTCCATTTCTTGCTCTC	tat	23
CCATTTCTTGCTCTCCTCTGT	tat	24
UUGGGGUU		25
CCCCGGGG		26
TTAGGGTT		27
GTGCAAATGAGTTTTCCAGA	rev	28
GCAACCCCAAATCCCCAGGA	rev	29
GCTGTTGATCCTTTAGGTAT	rev	30
CTTTCCACAGCCAGGATTCT	rev	31
TGCCTGGAGCTGCTTGATGC	rev	32
CCCAGACTGTGAGTTGCAAC	rev	33
AGATGCTGTTGCGCCTCAAT	rev	34
AGCCCTCAGCAAATTGTTCT	rev	35

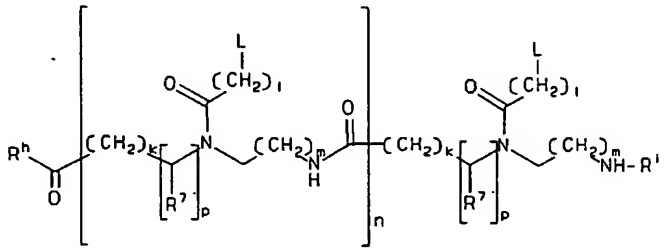
	GCTGCTGCACTATACCAGAC	rev	36
	AATAATTGTCTGGCCTGTAC	rev	37
	CGTCAGCGTCATTGACGCTG	rev	38
	CGCCCATAGTGCTTCCTGCT	rev	39
5	GCTCCCAAGAACCCAAGGAA	rev	40
	TAGGAAGGCCAGATCTTCCCT	gag/pol frameshift	41
	AAGAAAATTCCCTGGCCTTCC CTTGTAGGAAGGCCAG	gag/pol frameshift	42
	TGCTCTGAAGAAAATTCCCT	gag/pol frameshift	43
10	TCTGAAGAAAATTCCCTGGC	gag/pol frameshift	44
	GAAGAAAATTCCCTGGCCTT	gag/pol frameshift	45
	CTGGCCTTCCCTTGTAGGAA	gag/pol frameshift	46
	GCCTTCCCTTGTAGGAAGGC	gag/pol frameshift	47
	TTCCCTTGTAGGAAGGCCAG	gag/pol frameshift	48
15	CCTTGTAGGAAGGCCAGATC	gag/pol frameshift	49
	TGTAGGAAGGCCAGATCTTC	gag/pol frameshift	50
	CCTTTTCCTTCCCTTTT-K	gag/pol	51
	TTTTCCCTTCCTTTTCC-K	gag/pol	52
	TTTTTTCTTTTTT-K	gag/pol	53
20	GGCTCCATTTCTTGCTCTCC	tat	54
	CATTTCTTGCTCTCCTCTGT	tat	55
	GCTATGTCGACACCCAATTC	tat	56
	CCGCCCCTCGCCTCTTGCCG	tat	57
	CGGGTCCCCTCGGGATTGGG	tat	58
25	CACCTTCTTCTTCTATTCCT	tat	59
	TCCCAGGC	tat	60
	GTCTAACCAGAGAGACCC	tat	61
	CAGATCTGGTCTAACCAGAGAGACCC	tat	62
	GCTCCCAGGCTCAGATCT	tat	63
30	GCCAGAGAGCTCCCAGGCTCAGATCT	tat	64
	GCCAGAGAGCTCCCAGGC	tat	65
	GCTTAAGCAGTGGGTTCCCT	tat	66
	CTTTATTGAGGCTTAAGCAG	tat	67

35 The following examples are provided for illustrative purposes only and are not intended to limit the invention.

Example 1

General Method for the Synthesis of Antiviral Oligomers Comprising PNA

PNA subunits for oligomers of the invention are prepared generally in accordance with the methods disclosed by WO 92/20702, incorporated by reference herein in its entirety. Benzyhydrylamine resin (initially loaded 0.28 mmol/gm with Boc-L-Lys(2-chlorobenyloxycarbonyl)) is swollen in DMF and an excess of a monomer to be coupled is added, followed by dicyclohexylcarbodiimide (0.15M in 50% DMF in dichloromethane). The Boc deprotection is accomplished by trifluoroacetic acid treatment. The progress of the coupling reactions is monitored by quantitative ninhydrin analysis. The PNA is released from the resin using anhydrous HF under standard conditions. The products are purified using HPLC with acetonitrile-water (0.1%TFA) gradient and structure confirmed by fast atom bombardment mass spectrometry. PNA homopolymer has the structure:



wherein k is 1; m is 1; l is 1; p is 0; R^h is OH; R^i is H; and n is the number of bases in the oligomer sequence minus 1.

Example 2

Effect of Antiviral Oligomers Comprising PNA on HIV

TAR and tat function has been studied by removing the genes from the HIV genome and studying them in cell lines in isolation. Vectors have been constructed to study the

interactions between the tat protein and TAR element. The *tat* gene is expressed under the SV40 promoter. The TAR region is expressed from a separate plasmid fused to an easily assayed reporter gene, the placental alkaline phosphatase gene (PAP). P. Henthorn *et al.*, *Proc. Natl. Acad. Sci. USA*, **1988**, *85*, 6342. Enzymatic activity in cell culture models has been shown to be dependent upon both the presence of the essential elements of the TAR region and the presence of the tat protein. Sharp, P.A. and R. Marciniak, *Cell*, **1989**, *59*, 229; Feng, S. and E.C. Holland, *Nature*, **1988**, *334*, 165; Laspia, M.F. *et al.*, *Cell*, **1989**, *59*, 283; Garcia, J.A. *et al.*, *EMBO J.* **1989**, *8*, 765; and Berkhout, B., *Cell*, **1989**, *59*, 273. In essence, the vector system reconstitutes the events of tat-mediated TAR transactivation in which occurs in HIV infected cells.

TAT/TAR trans activation can be conveniently assayed by placing the human PAP gene under the regulatory control of the HIV-1 LTR sequences, which contain enhancer, promoter, and tar elements. A plasmid containing the HIV-1 LTR, pHIVCAT-0 (Feng, S. and E.C. Holland, *Nature*, **1988**, *334*, 165), contains HIV U3 in its entirety and R up through position +78 (a HindIII site). Digestion of this plasmid with a combination of HindIII and AatII releases the CAT cassette along with the SV40 sequences responsible for the processing of the RNA. A second plasmid, pSV2Apap, contains the PAP cassette with eukaryotic processing signals, under the transcriptional control of an SV40 promoter. Henthorn, P. *et al.*, *Proc. Natl. Acad. Sci. USA*, **1988**, *85*, 6342. The PAP cassette and processing sequences are released from the plasmid by digestion with HindIII and AatII. A new plasmid, pHIVPAP, is created by ligating the HindIII/AatII fragment containing the HIV-1 LTR and vector sequences from pHIVCAT-0, to the HindIII/AatII PAP cassette from pSV2Apap.

Antiviral oligomers comprising PNA prepared in accordance with Example 1, having the following oligomer sequences: GGGGCGGGGCGGGGCGGGGCG (SEQ ID NO: 1), GCGGGGTA (SEQ ID NO: 2), GGGGGGTA (SEQ ID NO: 3), TCGGGGTT (SEQ ID NO:

7), TTGGGGTT (SEQ ID NO: 8), CCGGGGCC (SEQ ID NO: 9), CGGGGGTA (SEQ ID NO: 10), TTGGGGTTGGGGTTGGGGTTGGGGG (SEQ ID NO: 13), GGGGTTGGGG (SEQ ID NO: 14), TTGGGGTTGGGGTTGGGGTTGGGG (SEQ ID NO: 15), TTGGGGTTGGGGTTGGGGTT (SEQ ID NO: 16), TTGGGGTTGGGGTTGGGG (SEQ ID NO: 17), TTGGGGTTGGGGTT (SEQ ID NO: 18), TTGGGGTTGGGG (SEQ ID NO: 19), GGGGTTGGGGTTGGGG (SEQ ID NO: 20), GGGGTTGGGGTTGGGGTTGGGG (SEQ ID NO: 21), TTGGGG (SEQ ID NO: 22), CCCCGGGG (SEQ ID NO: 26) and TTAGGGTT (SEQ ID NO: 27), are employed in this assay.

To test the activity of oligomers, pcDEBtat and pHIVPAP are co-transfected into HeLa cells by calcium/phosphate precipitation. The effects of the selected oligomers is determined as follows. HeLa cells are split 1:8 into 6-well dishes the day prior to the transfections. For each dish, 1 ug of pHIVPAP and 12ug of pcDEBtat are precipitated in 500 μl of HBS and 32 μl of 2.5 M $CaCl_2$. The $CaPO_4$ precipitate is divided evenly between the 6 wells. Oligomers are precepitated in the same manner and added to the cells at different concentrations. The precipitate is allowed to sit on the cells for 20 minutes then complete media is added and the cells are incubated for an additional 4 hours. The cells are then shocked with 10% glycerol in HBS.

After 48 hours, cells are harvested and protein and PAP assays performed as described by Henthorn, P. *et al.*, *Proc. Natl. Acad. Sci. USA*, **1988**, *85*, 6342 with the following modifications. The cells are harvested in 0.5 ml of TBS, of which 0.1 mls are used for use in the protein assay. The remaining 0.4 mls of cell suspension is pelleted then resuspended in 50 μl TBS. Endogenous phosphatases are inactivated by heating the cells at 65°C for 30 min. The heat stable human placental alkaline phosphatase activity is assayed by the addition of PNPP (0.5 ml, 5 mM PNPP) to the cell suspension, which is then incubated at 37°C. Activity is determined at 30 minute intervals using 150 μl aliquots of the reaction mixture and measuring absorbance at 405 nm with a Titertek Multiscan MCC\340 ELISA plate reader. The PAP

activity is normalized to the total protein in each well as determined by Bio-Rad protein assay, in which 1\5 of the harvested cells in TBS(0.1 μl) are added to 30 μl of Bio-Rad Protein Reagent, then incubated for 10 minutes at room temperature, followed by measurement of absorbance at 595 nm using the Titertek plate reader. It is expected that treatment of cells with oligomers directed to HIV will decrease or abrogate the production of PAP protein as a result of decreased HIV protein synthesis.

Example 3 Binding Properties of PNA compounds to HIV Sequence Targets

The binding properties of PNA compounds of the invention were studied by measuring the binding affinity of a 17 mer PNA oligomeric compound and its reverse 17 mer PNA oligomer (i.e. the same sequence synthesized in both amino to carboxy direction and carboxy to amino directions). The binding kinetics were measured by gel shift assay against both double stranded DNA and single stranded DNA.

Two 17 mer PNA compounds of the invention were synthesized as per the protocols of Example 1. These 17 mers PNA compounds, each complementary to the gag/pol region of the HIV genome, have the sequences:

PNA Compound 1

gly-TTT TCC CTT CCT TTT CC-lys (SEQ ID NO. 68); and

PNA Compound 2

gly-CCT TTT CCT TCC CTT TT-gly-COOH (SEQ ID NO. 69).

The double stranded DNA target was a 67 mer duplex containing the complementary sequence in opposite direction while the single stranded target was an exact complement 17 mer. PNA compounds bound via a strand displacement mechanism against the double stranded DNA target. Target strands were prepared for measuring binding in both the parallel direction (where the amino terminus of the PNA compound is aligned with the 5' terminus of the DNA compound) and the antiparallel

direction (where the carboxyl terminus of the PNA compound is aligned with the 5′ terminus of the DNA).

Dissociation constants (K_ds) were determined by gel shift in a buffer containing 100 mM Na, 10 mM phosphate, 0.1 mM EDTA at pH 7.0. The DNA target stands were ^{32}P end labeled. Binding affinity of the PNA compounds for the double stranded DNA target is shown in Table 1.

Table 1

Double Strand Strand Invasion

Apparent K_ds (1X TMTB, 3 days @ 37 °C)

Compound	Parallel	Antiparallel
Compound 1	4 μM	>>40 μM
Compound 2	>>40 μM[1]	>>40 μM
Compounds 1 + 2	7.5 μM	>>40 μM

[1] It is presently believed that the much weaker strand invasion binding of compound 2 results from the presence of the gly-COOH terminus group that gives this PNA a net neutral charge as compared to the net +2 charge of compound 1.

Binding affinity of the PNA compounds for the single stranded DNA target is shown in Table 2.

Table 2

Single Strand

Apparent K_ds (1X TMTB, 1 day @ 37 °C)

Compound	Parallel	Antiparallel
Compound 1	425 pM	510 pM
Compound 2	>>2 n M	1.2 nM
Compound 1 + 2	625 pM each	375 pM each

On rates were measured in experiments which were stopped by rapid freezing. The results of the On-rates are shown in Table 3.

Table 3

PNA On Rates (1X TMTB 100 nM Na+)

$T_{1/2}$ (50% bound)

Compound	Parallel	Antiparallel
Compound 1	0.75 hr	>> 510 hr

SEQUENCE LISTING

(1) GENERAL INFORMATION:

(i) APPLICANT: ISIS PHARMACEUTICALS, INC. AND ECKER, DAVID J.

(ii) TITLE OF INVENTION: OLIGOMERS FOR MODULATING HUMAN IMMUNODEFICIENCY VIRUS

(iii) NUMBER OF SEQUENCES: 69

(iv) CORRESPONDENCE ADDRESS:
(A) ADDRESSEE: Woodcock Washburn Kurtz Mackiewicz and Norris
(B) STREET: One Liberty Place - 46th Floor
(C) CITY: Philadelphia
(D) STATE: PA
(E) COUNTRY: U.S.A.
(F) ZIP: 19103

(v) COMPUTER READABLE FORM:
(A) MEDIUM TYPE: Floppy disk
(B) COMPUTER: IBM PC compatible
(C) OPERATING SYSTEM: PC-DOS/MS-DOS
(D) SOFTWARE: PatentIn Release #1.0, Version #1.25

(vi) CURRENT APPLICATION DATA:
(A) APPLICATION NUMBER: N/A
(B) FILING DATE: N/A
(C) CLASSIFICATION: N/A

(vii) PRIOR APPLICATION DATA:
(A) APPLICATION NUMBER: 08/099,718
(B) FILING DATE: 29 JULY 1993

(viii) ATTORNEY/AGENT INFORMATION:
(A) NAME: Ralph, Rebecca R.
(B) REGISTRATION NUMBER: 35,152
(C) REFERENCE/DOCKET NUMBER: ISIS-1600

(ix) TELECOMMUNICATION INFORMATION:
(A) TELEPHONE: 215-568-3100
(B) TELEFAX: 215-568-3439

(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 21
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site

(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
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(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 21
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site

/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
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(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

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(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
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(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
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(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
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(B) LOCATION: 3

(D) OTHER INFORMATION: /label= Modified-site
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(ix) FEATURE:
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(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site

/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 11

(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 25
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15

(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 21
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 22
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 23
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 24
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 25
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20 25

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10

(2) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 24
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site

/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 21
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 22
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 23
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 24
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14

(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 14
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10

(2) INFORMATION FOR SEQ ID NO:19:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 12
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site

(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10

(2) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 16
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site

/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa

(2) INFORMATION FOR SEQ ID NO:21:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7

(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 21
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 22
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:22:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 6
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:23:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 19
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12

(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa

(2) INFORMATION FOR SEQ ID NO:24:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 21
(B) TYPE: amino acid

(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19

(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 21
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Uracil heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Uracil heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Uracil heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Uracil heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:26:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site

(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:27:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3

(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:28:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site

/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:29:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site

/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:30:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14

(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:31:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site

(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:32:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site

/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:33:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site

(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:34:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:35:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5

(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:36:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site

(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:37:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site

/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:38:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13

(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:39:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20

(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site

(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:40:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site

/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:41:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 42
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site

(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 21

(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 22
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 23
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 24
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 25
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 26
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 27
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 28
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 29
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 30
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 31
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 32
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 33
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 34
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 35
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 36
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 37
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 38
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 39
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 40
(D) OTHER INFORMATION: /label= Modified-site

/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 41
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 42
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20 25 30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
35 40

(2) INFORMATION FOR SEQ ID NO:42:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 16
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14

(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa

(2) INFORMATION FOR SEQ ID NO:43:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site

(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:44:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE

/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:45:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7

(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:46:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site

(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:47:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site

/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:48:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15

(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:49:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Adenine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:50:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:51:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4

(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Lys

(2) INFORMATION FOR SEQ ID NO:52:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site

(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Lys

(2) INFORMATION FOR SEQ ID NO:53:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 14
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Lys
1 5 10

(2) INFORMATION FOR SEQ ID NO:54:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site

/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:55:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site

(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:56:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to

(2) INFORMATION FOR SEQ ID NO:56:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:57:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5

(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:58:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site

(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:59:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site

/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:60:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:61:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site

/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa

(2) INFORMATION FOR SEQ ID NO:62:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 26
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1

(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site

/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 21
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 22
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 23
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 24
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 25
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 26
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20 25

(2) INFORMATION FOR SEQ ID NO:63:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site

(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl

group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:63:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa

(2) INFORMATION FOR SEQ ID NO:64:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 26
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9

(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 21
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 22
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 23
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 24
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 25
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 26
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:64:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20 25

(2) INFORMATION FOR SEQ ID NO:65:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9

(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:65:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa

(2) INFORMATION FOR SEQ ID NO:66:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to

N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:66:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:67:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4

(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note= "Thymine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note= "Cytosine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /label= Modified-site
/note= "Adenine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."
(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /label= Modified-site
/note= "Guanine heterocyclic base is attached to N-acetyl(2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:67:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

(2) INFORMATION FOR SEQ ID NO:68:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 19
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note="Cytosine heterocyclic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note="Cytosine heterocyclic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note="Cytosine heterocyclic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11

(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note="Cytosine heterocyclic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note="Cytosine heterocyclic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note="Cytosine heterocyclic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note="Cytosine heterocyclic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:68:

Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Lys

(2) INFORMATION FOR SEQ ID NO:69:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 19
(B) TYPE: amino acid
(C) STRANDEDNESS: single

(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 2
(D) OTHER INFORMATION: /label= Modified-site
/note="Cytosine heterocyclic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /label= Modified-site
/note="Cytosine heterocyclic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /label= Modified-site
/note="Cytosine heterocyclic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(D) OTHER INFORMATION: /label= Modified-site
/note="Cytosine heterocyclic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /label= MODIFIED-SITE
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 12
(D) OTHER INFORMATION: /label= Modified-site
/note="Cytosine heterocyclic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 13
(D) OTHER INFORMATION: /label= Modified-site
/note="Cytosine heterocyclic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /label= Modified-site
/note="Cytosine heterocyclic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 15
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 18
(D) OTHER INFORMATION: /label= Modified-site
/note="Thymine heterocylic base is attached to N-acetyl (2-aminoethyl)glycine through the N-acetyl group."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:69:

Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Gly

WHAT IS CLAIMED IS:

1. An oligomer hybridizable to AUG region, 5' untranslated region, 3' untranslated region, splice junctions or coding sequence of human immunodeficiency virus gene selected from the group consisting of env, gag, pol, rev, and tat and comprising at least one peptide nucleic acid subunit.

2. The oligomer of claim 1 wherein the sequence of the oligomer is selected from the group consisting of:

GGGGCGGGGCGGGGCGGGGCG (SEQ ID NO: 1);
GCGGGGTA (SEQ ID NO: 2);
GGGGGGTA (SEQ ID NO: 3);
GCAAAATA (SEQ ID NO: 4);
GCTTTTTA (SEQ ID NO: 5);
GCCCCCTA (SEQ ID NO: 6);
TCGGGGTT (SEQ ID NO: 7);
TTGGGGTT (SEQ ID NO: 8);
CCGGGGCC (SEQ ID NO: 9);
CGGGGGTA (SEQ ID NO: 10);
CGGGGTTGGGG (SEQ ID NO: 11);
TTGGGGTTGGGGTTGGGGTTGGGGG (SEQ ID NO: 12);
TTTGGTTT (SEQ ID NO: 13);
GGGGTTGGGG (SEQ ID NO: 14);
TTGGGGTTGGGGTTGGGGTTGGGG (SEQ ID NO: 15);
TTGGGGTTGGGGTTGGGGTT (SEQ ID NO: 16);
TTGGGGTTGGGGTTGGGG (SEQ ID NO: 17);
TTGGGGTTGGGGTT (SEQ ID NO: 18);
TTGGGGTTGGGG (SEQ ID NO: 19);
GGGGTTGGGGTTGGGG (SEQ ID NO: 20);
GGGGTTGGGGTTGGGGTTGGGG (SEQ ID NO: 21);
TTGGGG (SEQ ID NO: 22);
GGCTCCATTTCTTGCTCTC (SEQ ID NO: 23):
CCATTTCTTGCTCTCCTCTGT (SEQ ID NO: 24);
UUGGGGUU (ISIS-5753; SEQ ID NO: 25);
CCCCGGGG (ISIS-5755; SEQ ID NO: 26);
TTAGGGTT (ISIS-5756; SEQ ID NO: 27);

GTGCAAATGAGTTTTCCAGA (SEQ ID NO: 28);
GCAACCCCAAATCCCCAGGA (SEQ ID NO: 29);
GCTGTTGATCCTTTAGGTAT (SEQ ID NO: 30);
CTTTCCACAGCCAGGATTCT (SEQ ID NO: 31);
TGCCTGGAGCTGCTTGATGC (SEQ ID NO: 32);
CCCAGACTGTGAGTTGCAAC (SEQ ID NO: 33);
AGATGCTGTTGCGCCTCAAT (SEQ ID NO: 34);
AGCCCTCAGCAAATTGTTCT (SEQ ID NO: 35);
GCTGCTGCACTATACCAGAC (SEQ ID NO: 36);
AATAATTGTCTGGCCTGTAC (SEQ ID NO: 37);
CGTCAGCGTCATTGACGCTG (SEQ ID NO: 38);
CGCCCATAGTGCTTCCTGCT (SEQ ID NO: 39);
GCTCCCAAGAACCCAAGGAA (SEQ ID NO: 40);
TAGGAAGGCCAGATCTTCCCT (SEQ ID NO: 41);
AAGAAAATTCCCTGGCCTTCC
CTTGTAGGAAGGCCAG (SEQ ID NO: 42);
TGCTCTGAAGAAAATTCCCT (SEQ ID NO: 43);
TCTGAAGAAAATTCCCTGGC (SEQ ID NO: 44);
GAAGAAAATTCCCTGGCCTT (SEQ ID NO: 45);
CTGGCCTTCCCTTGTAGGAA (SEQ ID NO: 46);
GCCTTCCCTTGTAGGAAGGC (SEQ ID NO: 47);
TTCCCTTGTAGGAAGGCCAG (SEQ ID NO: 48);
CCTTGTAGGAAGGCCAGATC (SEQ ID NO: 49);
TGTAGGAAGGCCAGATCTTC (SEQ ID NO:50);
CCTTTTCCTTCCCTTTT-K (SEQ ID NO:51);
TTTTCCCTTCCTTTTCC-K (SEQ ID NO:52);
TTTTTTCTTTTTT-K (SEQ ID NO:53);
GGCTCCATTTCTTGCTCTCC (SEQ ID NO: 54);
CATTTCTTGCTCTCCTCTGT (SEQ ID NO: 55);
GCTATGTCGACACCCAATTC (SEQ ID NO: 56);
CCGCCCCTCGCCTCTTGCCG (SEQ ID NO: 57);
CGGGTCCCCTCGGGATTGGG (SEQ ID NO: 58);
CACCTTCTTCTTCTATTCCT (SEQ ID NO: 59);
TCCCAGGC (SEQ ID NO: 60);
GTCTAACCAGAGAGACCC (SEQ ID NO: 61);
CAGATCTGGTCTAACCAGAGAGACCC (SEQ ID NO: 62);
GCTCCCAGGCTCAGATCT (SEQ ID NO: 63);
GCCAGAGAGCTCCCAGGCTCAGATCT (SEQ ID NO: 64);

GCCAGAGAGCTCCCAGGC (SEQ ID NO: 65);
GCTTAAGCAGTGGGTTCCCT (SEQ ID NO: 66); and
CTTTATTGAGGCTTAAGCAG (SEQ ID NO: 67).

3. The oligomer of claim 1 wherein the sequence of the oligomer is selected from the group consisting of:
GGGGCGGGGCGGGGCGGGGCG (SEQ ID NO: 1);
GCGGGGTA (SEQ ID NO: 2);
GGGGGGTA (SEQ ID NO: 3);
TCGGGGTT (SEQ ID NO: 7);
TTGGGGTT (SEQ ID NO: 8);
CCGGGGCC (SEQ ID NO: 9);
CGGGGGTA (SEQ ID NO: 10);
TTGGGGTTGGGGTTGGGGTTGGGGG (SEQ ID NO: 13);
GGGGTTGGGG (SEQ ID NO: 14);
TTGGGGTTGGGGTTGGGGTTGGGG (SEQ ID NO: 15);
TTGGGGTTGGGGTTGGGGTT (SEQ ID NO: 16);
TTGGGGTTGGGGTTGGGG (SEQ ID NO: 17);
TTGGGGTTGGGGTT (SEQ ID NO: 18);
TTGGGGTTGGGG (SEQ ID NO: 19);
GGGGTTGGGGTTGGGG (SEQ ID NO: 20);
GGGGTTGGGGTTGGGGTTGGGG (SEQ ID NO: 21);
TTGGGG (SEQ ID NO: 22);
CCCCGGGG (SEQ ID NO: 26); and
TTAGGGTT (SEQ ID NO: 27).

4. The oligomer of claim 1 wherein substantially all the subunits of the oligomer are peptide nucleic acid subunits.

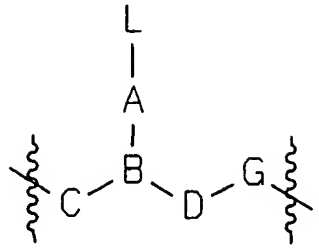
5. The oligomer of claim 2 incorporated in a pharmaceutically acceptable carrier.

6. An oligomer having a sequence selected from the group consisting of:
GGGGCGGGGCGGGGCGGGGCG (SEQ ID NO: 1);
GCGGGGTA (SEQ ID NO: 2);

GGGGGGTA (SEQ ID NO: 3);
GCAAAATA (SEQ ID NO: 4);
GCTTTTTA (SEQ ID NO: 5);
GCCCCCTA (SEQ ID NO: 6);
TCGGGGTT (SEQ ID NO: 7);
TTGGGGTT (SEQ ID NO: 8);
CCGGGGCC (SEQ ID NO: 9);
CGGGGGTA (SEQ ID NO: 10);
CGGGGTTGGGG (SEQ ID NO: 11);
TTGGGGTTGGGGTTGGGGTTGGGGG (SEQ ID NO: 12);
TTTGGTTT (SEQ ID NO: 13);
GGGGTTGGGG (SEQ ID NO: 14);
TTGGGGTTGGGGTTGGGGTTGGGG (SEQ ID NO: 15);
TTGGGGTTGGGGTTGGGGTT (SEQ ID NO: 16);
TTGGGGTTGGGGTTGGGG (SEQ ID NO: 17);
TTGGGGTTGGGGTT (SEQ ID NO: 18);
TTGGGGTTGGGG (SEQ ID NO: 19);
GGGGTTGGGGTTGGGG (SEQ ID NO: 20);
GGGGTTGGGGTTGGGGTTGGGG (SEQ ID NO: 21);
TTGGGG (SEQ ID NO: 22);
GGCTCCATTTCTTGCTCTC (SEQ ID NO: 23);
CCATTTCTTGCTCTCCTCTGT (SEQ ID NO: 24);
UUGGGGUU (ISIS-5753; SEQ ID NO: 25);
CCCCGGGG (ISIS-5755; SEQ ID NO: 26);
TTAGGGTT (ISIS-5756; SEQ ID NO: 27);
GTGCAAATGAGTTTTCCAGA (SEQ ID NO: 28);
GCAACCCCAAATCCCCAGGA (SEQ ID NO: 29);
GCTGTTGATCCTTTAGGTAT (SEQ ID NO: 30);
CTTTCCACAGCCAGGATTCT (SEQ ID NO: 31);
TGCCTGGAGCTGCTTGATGC (SEQ ID NO: 32);
CCCAGACTGTGAGTTGCAAC (SEQ ID NO: 33);
AGATGCTGTTGCGCCTCAAT (SEQ ID NO: 34);
AGCCCTCAGCAAATTGTTCT (SEQ ID NO: 35);
GCTGCTGCACTATACCAGAC (SEQ ID NO: 36);
AATAATTGTCTGGCCTGTAC (SEQ ID NO: 37);
CGTCAGCGTCATTGACGCTG (SEQ ID NO: 38);
CGCCCATAGTGCTTCCTGCT (SEQ ID NO: 39);

GCTCCCAAGAACCCAAGGAA (SEQ ID NO: 40);
TAGGAAGGCCAGATCTTCCCT (SEQ ID NO: 41);
AAGAAAATTCCCTGGCCTTCC
CTTGTAGGAAGGCCAG (SEQ ID NO: 42);
TGCTCTGAAGAAAATTCCCT (SEQ ID NO: 43);
TCTGAAGAAAATTCCCTGGC (SEQ ID NO: 44);
GAAGAAAATTCCCTGGCCTT (SEQ ID NO: 45);
CTGGCCTTCCCTTGTAGGAA (SEQ ID NO: 46);
GCCTTCCCTTGTAGGAAGGC (SEQ ID NO: 47);
TTCCCTTGTAGGAAGGCCAG (SEQ ID NO: 48);
CCTTGTAGGAAGGCCAGATC (SEQ ID NO: 49);
TGTAGGAAGGCCAGATCTTC (SEQ ID NO: 50);
CCTTTTCCTTCCCTTTT-K (SEQ ID NO:51);
TTTTCCCTTCCTTTTCC-K (SEQ ID NO:52);
TTTTTTCTTTTTT-K (SEQ ID NO:53);
GGCTCCATTTCTTGCTCTCC (SEQ ID NO: 54);
CATTTCTTGCTCTCCTCTGT (SEQ ID NO: 55);
GCTATGTCGACACCCAATTC (SEQ ID NO: 56);
CCGCCCCTCGCCTCTTGCCG (SEQ ID NO: 57);
CGGGTCCCCTCGGGATTGGG (SEQ ID NO: 58);
CACCTTCTTCTTCTATTCCT (SEQ ID NO: 59);
TCCCAGGC (SEQ ID NO: 60);
GTCTAACCAGAGAGACCC (SEQ ID NO: 61);
CAGATCTGGTCTAACCAGAGAGACCC (SEQ ID NO: 62);
GCTCCCAGGCTCAGATCT (SEQ ID NO: 63);
GCCAGAGAGCTCCCAGGCTCAGATCT (SEQ ID NO: 64);
GCCAGAGAGCTCCCAGGC (SEQ ID NO: 65);
GCTTAAGCAGTGGGTTCCCT (SEQ ID NO: 66); and
CTTTATTGAGGCTTAAGCAG (SEQ ID NO: 67); and

wherein at least one subunit of the oligomer is a peptide nucleic acid subunit of the formula:



(I)

wherein:

L is one of the adenine, thymine, cytosine or guanine heterocyclic bases of the oligomer;

C is $(CR^6R^7)_y$ where R^6 is hydrogen and R^7 is selected from the group consisting of the side chains of naturally occurring alpha amino acids, or R^6 and R^7 are independently selected from the group consisting of hydrogen, (C_2-C_6)alkyl, aryl, aralkyl, heteroaryl, hydroxy, (C_1-C_6)alkoxy, (C_1-C_6)alkylthio, NR^3R^4 and SR^5, where each of R^3 and R^4 is independently selected from the group consisting of hydrogen, (C_1-C_4)alkyl, hydroxy- or alkoxy- or alkylthio-substituted (C_1-C_4)alkyl, hydroxy, alkoxy, alkylthio and amino;, and R^5 is hydrogen, (C_1-C_6)alkyl, hydroxy-, alkoxy-, or alkylthio-substituted (C_1-C_6)alkyl, or R^6 and R^7 taken together complete an alicyclic or heterocyclic system;

D is $(CR^6R^7)_z$ where R^6 and R^7 are as defined above;

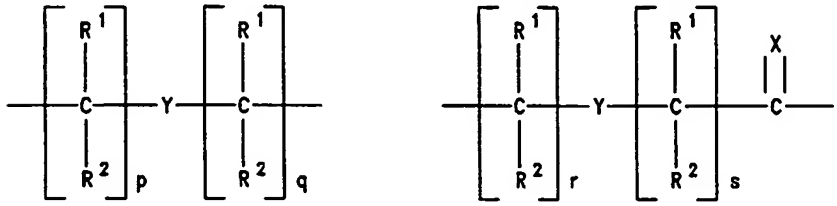
each of y and z is zero or an integer from 1 to 10, the sum y + z being greater than 2 but not more than 10;

G is $-NR^3CO-$, $-NR^3CS-$, $-NR^3SO-$ or $-NR^3SO_2-$, in either orientation, where R^3 is as defined above;

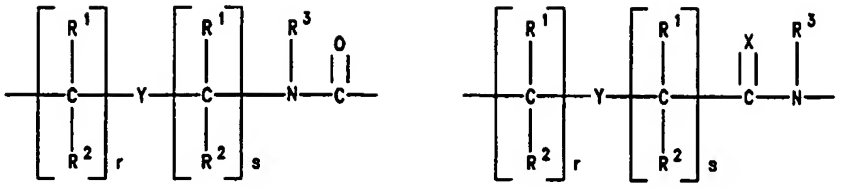
each pair of A and B is selected such that:

(a) A is a group of formula (IIa), (IIb) or (IIc) and B is N or R^3N^+; or

(b) A is a group of formula (IId) and B is CH;



(IIa) (IIb)



(IIc) (IId)

where:

X is O, S, Se, NR^3, CH_2 or $C(CH_3)_2$;

Y is a single bond, O, S or NR^4;

each of p and q is zero or an integer from 1 to 5, the sum p+q being not more than 10;

each of r and s is zero or an integer from 1 to 5, the sum r+s being not more than 10;

each R^1 and R^2 is independently selected from the group consisting of hydrogen, (C_1-C_4)alkyl which may be hydroxy- or alkoxy- or alkylthio-substituted, hydroxy, alkoxy, alkylthio, amino and halogen.

7. The oligomer of claim 6 wherein A is $-CH_2CO-$, B is N, C is CH_2CH_2 and D is CH_2.

8. The oligomer of claim 6 wherein all of the subunits are peptide nucleic acid subunits;

said oligomer including a group Q on one end of said oligomer and a group I on the other end of said oligomer;

Q is $-CO_2H$, $-CONR'R''$, $-SO_3H$ or $-SO_2NR'R''$ or an activated derivative of $-CO_2H$ or $-SO_3H$; and

I is $-NHR'''R''''$ or $-NR'''C(O)R''''$, where R', R", R''' and R'''' are independently selected from the group consisting of hydrogen, alkyl, amino protecting groups, reporter ligands, intercalators, chelators, peptides, proteins, carbohydrates, lipids, steroids, oligonucleotides and soluble and non-soluble polymers.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US94/08517

A. CLASSIFICATION OF SUBJECT MATTER
IPC(5) :C07H 21/04; A61K 48/00, 49/00
US CL :536/23.1, 23.72, 24.1, 24.32, 24.5,
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 536/23.1, 23.72, 24.1, 24.32, 24.5,

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS, Dialog, Biosis, Biotech, Medline
Search terms: HIV, nucleotide analog, peptide nucleic acid, antisense

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Proceedings of the National Academy of Sciences, Volume 86, issued October 1989, Agrawal et al., "Inhibition of Human Immunodeficiency Virus in Early Infected and Chronically Infected Cells by Antisense Oligodeoxynucleotides and Their Phosphorothioate Analogues", pages 7790-7794, see Table 1.	1-8
A	Proceedings of the National Academy of Sciences, Volume 85, issued October 1988, Agrawal et al., "Oligodeoxynucleoside Phosphoramidates and Phosphorothioates as Inhibitors of Human Immunodeficiency Virus", pages 7079-7083, see Table 1.	1-8

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 29 SEPTEMBER 1994	Date of mailing of the international search report 27 OCT 1994
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer DAVID GUZO Telephone No. (703) 308-0196

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US94/08517

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Proceedings of the National Academy of Sciences, Volume 85, issued August 1988, Goodchild et al., "Inhibition of Human Immunodeficiency Virus Replication by Antisense Oligodeoxynucleotides", pages 5507-5511, see Figure 1 and Tables 1 and 2.	1-8